CCGGGGGGAGGCTCTTAGGATGTTGTGCTCCGCGGGGCTCAGACGAAATCTTCTGTGAATGGAAG
AAATGCTTCCAAGCAAACAGCCACTACCAGAACAACTGAGAAAGAGGCCAGAGCGCGAGTTCTC
AAACCCTGATTTCGCAGGAGCCGGAGGGGGATATTGGAGAGAAGGTATTTCCAGTCACGCGCAG
TAACAGACCAGCCAAGGACCAGGACTGGAGTTCTGTTCTACAACGGTGGAACAGTGAACGGTCT
CCAAAGAGATGGAGTACGACGCTTACAACGACTCCGGCATCTATGATGATGAGTACTCTGATGG
CTTTGGCTACTTTGTGGACTTGGAGGAGGCGAGTCCGTGGGAGGCCAAGGTGGCCCCGGTCTTC
CTGGTGGTGATCTACAGCTTGGTGTGCTTCCTCGGTCTCCTAGGCAACGGCCTGGTGATTGTCA
TCGCCACCTTCAAGATGAAGAAGACCGTGAACACTGTGTGGTTTGTCAACCTGGCTGTGGCCGA
CTTCCTGTTCAACATCTTTTTGCCGATGCACATCACCTACGCGGCCATGGACTACCACTGGGTG
TTCGGGAAGGCCATGTGCAAGATCAGCAACTTCTTGCTCAGCCACAACATGTACACCAGCGTCT
TCCTGCTGACTGTCATCAGCTTTGACCGCTGCATCTCCGTGCTGCTCCCCGTCTGGTCCCAGAA
CCACCGCAGCATCCGCCTGGCCTACATGACCTGCTCGGCCGTCTGGGTCCTGGCTTTCTTCTTG
AGCTCCCCGTCCCTTGTCTTCCGGGACACCGCCAACATTCATGGGAAGATAACCTGCTTCAACA
ACTTCAGCTTGGCCGCGCCTGAGTCCTCCCCACATCCCGCCCACTCGCAAGTAGTTTCCACAGG
GTACAGCAGACACGTGGCGGTCACTGTCACCCGCTTCCTTTGCGGCTTCCTGATCCCCGTCTTC
ATCATCACGGCCTGCTACCTTACCATCGTCTTCAAGCTGCAGCGCAACCGCCTGGCCAAGAACA
AGAAGCCCTTCAAGATCATCATCACCATCATCATCACCTTCTTCCTCTGCTGGTGCCCCTACCA
CACCCTCTACCTGCTGGAGCTCCACCACACAGCTGTGCCAAGCTCTGTCTTCAGCCTGGGGCTA
CCCCTGGCCACGGCCGTCGCCATCGCCAACAGCTGCATGAACCCCATTCTGTACGTCTTCATGG
GCCACGACTTCAGAAAATTCAAGGTGGCCCTCTTCTCCCGCCTGGCCAACGCCCTGAGTGAGGA
CACAGGCCCCTCCTCCTACCCCAGTCACAGGAGCTTCACCAAGATGTCGTCTTTGAATGAGAAG
GCTTCGGTGAATGAGAAGGAGACCAGTACCCTCTGAACCTCACCTGGGAATGTCCCCCAAAGGT
GCCACGGCCCAGGGACGCCTAGGGACTTGTCTCCGGAAGTGGGAGACATGCCGGGAGCCTTTGG
GAATGCTCCAACGCCCACTGAATTTTGCACAAGGCGGCTCATGTTTTAAGTGGGGTTCCCAAGT
GTGGACACTCTTCCAGTAAAATGGCAGGCAAGCAACCCGAGCTTCTACAACAGGAGCAGGGGAC
CGACTGTGACTGACTCAGAAAAGGGAGCATTTCTGAAGCCAAGACTTGAGCTGTGACCAACATA
CAGGCCAACATACACGATGTCGCCGTGCATGCCCTGAACATGCTGCGCAGTTTTCGTGGGTGAG
GAAGTTACCGCAAACCCATTGCAGACCTGTTATGGCAACATGACAGTCAAACCAACAAAGCCCA
ATACACCCCAACATCCTCCAAGACCTTGACTTTGGATTTCAGAAGAACGGGGGGTGGGGGGAAC
GAGGACCTGAGGGTTAATTTCGAGCTTGGCGAAGCC (SEQ ID NO:1)

FIGURE 1

underlined = deleted in targeting construct

[ ] = sequence flanking Neo insert in targeting construct

```
CCGGGGGAGGCTCTTAGGATGTTGTGCTCCGCGGGGCTCAGACGAAATCTTCTGTGAATG
GAAGAAATGCTTCCAAGCAAACAGCCACTACCAGAACAACTGAGAAAGAGGCCAGAGCGC
GAGTTCTCAAACCCTGATTTCGCAGGAGCCGGAGGGGGATATTGGAGAGAAGGTATTTCC
AGTCACGCGCAGTAACAGACCAGCCAAGGACCAGGACTGGAGTTCTGTTCTACAACGGTG
GAACAGTGAACGGTCTCCAAAG[AGATGGAGTACGACGCTTACAACGACTCCGGCATCTA
TGATGATGAGTACTCTGATGGCTTTGGCTACTTTGTGGACTTGGAGGAGGCGAGTCCGTG
GGAGGCCAAGGTGGCCCCGGTCTTCCTGGTGGTGATCTACAGCTTGGTGTGCTTCCTCGG
TC]TCCTAGGCAACGGCCTGGTGATTGTCATCGCCACCTTCAAGATGAAGAAGACCGTGA
ACACTGTGTGGTTTGTCAACCTGGCTGTGGCCGACTTCCTGTTCAACATCTTTTTGCCGA
TGCACATCACCTACGCGGCCATGGACTACCACTGGGTG[TTCGGGAAGGCCATGTGCAAG
ATCAGCAACTTCTTGCTCAGCCACAACATGTACACCAGCGTCTTCCTGCTGACTGTCATC
AGCTTTGACCGCTGCATCTCCGTGCTGCTCCCCGTCTGGTCCCAGAACCACCGCAGCATC
CGCCTGGCCTACATGACCTGCTCGGCCGTCTGGGTCCTGGCTTTCTTCTTGAGCTCCCCG
TCCCTTGTCTTCCGGGACACCGCCAACATTCATGGGAAGATAACCTGCTTCAACAACTTC
AGCTTGGCCGCGCCTGAGTCCTCCCCACATCCCGCCCACTCGCAAGTAGTTTCCACAGGG
TACAGCAGACACGTGGCGGTCACTGTCACCCGCTTCCTTTGCGGCTTCCTGATCCCCGTC
TTCATCATCACGGCCTGCTACCTTACCATCGTCTTCAAGCTGCAGCGCAACCGCCTGGCC
AAGAACAAGAAGCCCTTCAAGATCATCATCACCATCATCATCACCTTCTTCCTCTGCTGG
TGCCCCTACCACACCCTCTACCTGCTGGAGCTCCACCACACAGCTGTGCCAAGCTCTGTC
TTCAGCCTGGGGCTACCCCTGGCCACGGCCGTCGCCATCGCCAACAGCTGCATGAACCCC
ATTCTGTACGTCTTCATGGGCCACGACTTCAGAAAATTCAAGGTGGCCCTCTTCTCCCGC
CTGGCCAACGCCCTGAGTGAGGACACAGGCCC]CTCCTCCTACCCCAGTCACAGGAGCTT
CACCAAGATGTCGTCTTTGAATGAGAAGGCTTCGGTGAATGAGAAGGAGACCAGTACCCT
CTGAACCTCACCTGGGAATGTCCCCCAAAGGTGCCACGGCCCAGGGACGCCTAGGGACTT
GTCTCCGGAAGTGGGAGACATGCCGGGAGCCTTTGGGAATGCTCCAACGCCCACTGAATT
TTGCACAAGGCGGCTCATGTTTTAAGTGGGGTTCCCAAGTGTGGACACTCTTCCAGTAAA
ATGGCAGGCAAGCAACCCGAGCTTCTACAACAGGAGCAGGGGACCGACTGTGACTGACTC
AGAAAAGGGAGCATTTCTGAAGCCAAGACTTGAGCTGTGACCAACATACAGGCCAACATA
CACGATGTCGCCGTGCATGCCCTGAACATGCTGCGCAGTTTTCGTGGGTGAGGAAGTTAC
CGCAAACCCATTGCAGACCTGTTATGGCAACATGACAGTCAAACCAACAAAGCCCAATAC
ACCCCAACATCCTCCAAGACCTTGACTTTGGATTTCAGAAGAACGGGGGGTGGGGGGAAC
GAGGACCTGAGGGTTAATTTCGAGCTTGGCGAAGCC
```

FIGURE 2A

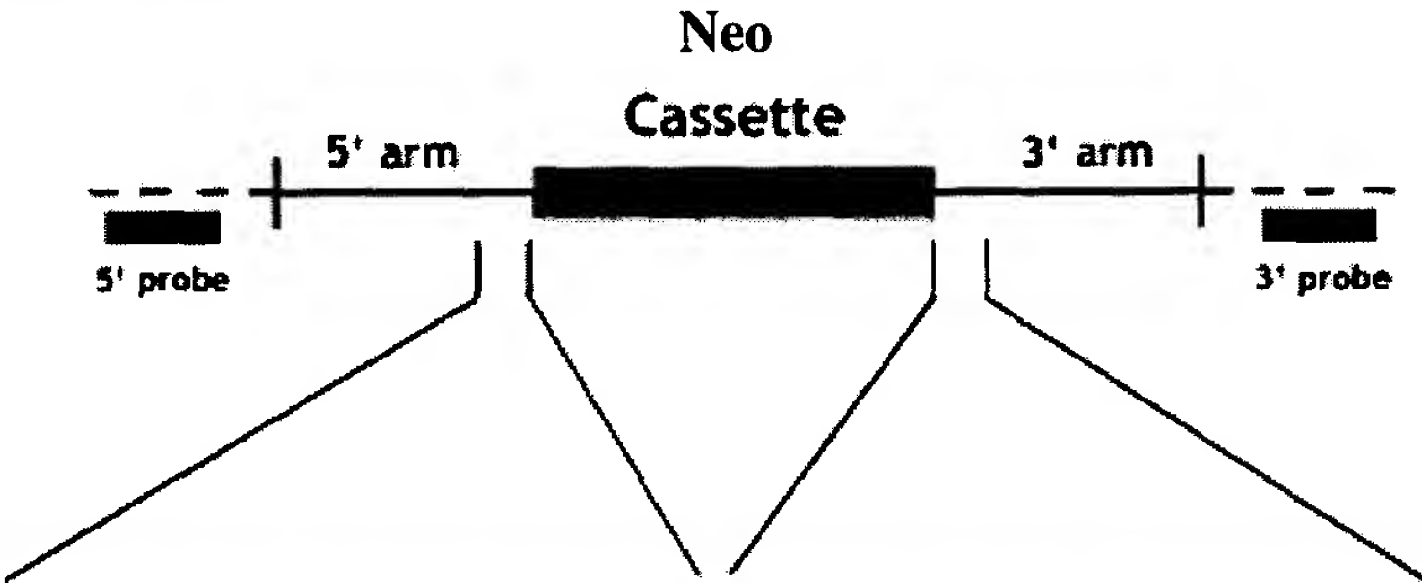## Gene Sequence Structure *

422 bp   Sequence Deleted   576 bp

Size of full-length
cDNA: 1892 bp

Targeting Vector* (genomic sequence)

Construct Number: 993

Neo

Cassette

5' arm

3' arm

5' probe

3' probe

Arm Length:
5': 2.3 kb
3': 1.9 kb

————— Targeting Vector
– – – – – Endogenous Locus

* Not drawn to scale

```
5'>CCACAGAGGTCCTCAGCCTGT
GACCCTGTCTTCCCTCACAGAGAT
GGAGTACGACGCTTACAACGACTC
CGGCATCTATGATGATGAGTACTC
TGATGGCTTTGGCTACTTTGTGGA
CTTGGAGGAGGCGAGTCCGTGGGA
GGCCAAGGTGGCCCCGGTCTTCCT
GGTGGTGATCTACAGCTTGGTGTG
CTTCCTCGGTC<3'
(SEQ ID NO:2)
```

```
5'>TTCGGGAAGGCCATGTGCAAG
ATCAGCAACTTCTTGCTCAGCCAC
AACATGTACACCAGCGTCTTCCTG
CTGACTGTCATCAGCTTTGACCGC
TGCATCTCCGTGCTGCTCCCCGTC
TGGTCCCAGAACCACCGCAGCATC
CGCCTGGCCTACATGACCTGCTCG
GCCGTCTGGGTCCTGGCTTTCTTC
TTGAGCTCCCC<3'
(SEQ ID NO:3)
```

FIGURE 2B